



New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **TETRAETHYL LEAD**

CAS Number: 78-00-2
DOT Number: UN 1649

RTK Substance number: 1817
Date: January 1996 Revision: March 2002

HAZARD SUMMARY

- * **Tetraethyl Lead** can affect you when breathed in, by passing through your skin, and when swallowed.
- * **Tetraethyl Lead** can irritate the eyes with possible loss of vision.
- * Exposure can cause skin burns and redness.
- * Breathing **Tetraethyl Lead** can irritate the nose and throat causing coughing and wheezing.
- * High exposure can cause headache, irritability, reduced memory, disturbed sleep, tiredness, personality changes, convulsions and death.
- * Repeated exposure to **Tetraethyl Lead** can lead to *Lead poisoning*. Symptoms include metallic taste, weight loss, colic, upset stomach, nausea and vomiting, and muscle cramps.
- * Higher levels can cause muscle and joint pains, weakness and fatigue.
- * *Lead* exposure increases the risk of high blood pressure.
- * High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- * **Tetraethyl Lead** may cause kidney and brain damage and damage to blood cells causing anemia.
- * **Tetraethyl Lead** is a REACTIVE CHEMICAL and an EXPLOSION HAZARD.

IDENTIFICATION

Tetraethyl Lead is a colorless, oily liquid with a sweet, musty odor. It was used as a gasoline additive to prevent "knocking" in motors. It is no longer produced in the United States due to environmental concerns.

REASON FOR CITATION

- * **Tetraethyl Lead** is on the Hazardous Substance List because it is regulated by OSHA and cited by ACGIH, NIOSH, DEP, HHAG, NFPA and EPA.
- * This chemical is on the Special Health Hazard Substance List because it is **REACTIVE**.
- * Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public

employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard, 1910.1200, requires private employers to provide similar training and information to their employees.

- * Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under OSHA 1910.1020.
- * If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

OSHA: The legal airborne permissible exposure limit (PEL) is **0.075 mg/m³** averaged over an 8-hour workshift.

NIOSH: The recommended airborne exposure limit is **0.075 mg/m³** averaged over a 10-hour workshift.

ACGIH: The recommended airborne exposure limit is **0.1 mg/m³** averaged over an 8-hour workshift.

- * The above exposure limits are for air levels only. When skin contact also occurs, you may be overexposed, even though air levels are less than the limits listed above.

WAYS OF REDUCING EXPOSURE

Although the primary route of exposure to **Tetraethyl Lead** is through inhalation, you can be exposed to **Tetraethyl Lead** if it gets into your mouth and is swallowed. To reduce exposure by all routes the following actions are recommended:

- * Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
- * Wear protective work clothing.
- * Wash thoroughly immediately after exposure to **Tetraethyl Lead** and at the end of the workshift.
- * Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Tetraethyl Lead** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Tetraethyl Lead**:

- * **Tetraethyl Lead** can irritate the eyes with possible loss of vision.
- * Exposure can cause skin burns and redness.
- * Breathing **Tetraethyl Lead** can irritate the nose and throat causing coughing and wheezing.
- * High exposure can cause headache, irritability, reduced memory, disturbed sleep, tiredness, personality changes, convulsions and death.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Tetraethyl Lead** and can last for months or years:

Cancer Hazard

- * There is limited evidence that **Tetraethyl Lead** causes cancer in animals. It may cause cancer of the lymph.
- * Many scientists believe there is no safe level of exposure to a carcinogen. Such substances may also have the potential for causing reproductive damage in humans.

Reproductive Hazard

- * While **Tetraethyl Lead** has not been identified as a teratogen or a reproductive hazard, *Lead* and certain *Lead compounds* have been determined to be teratogens and may also cause reproductive damage. **Tetraethyl Lead** should therefore be handled with extreme caution

Other Long-Term Effects

- * Repeated exposure to **Tetraethyl Lead** can lead to *Lead poisoning*. Symptoms include metallic taste, weight loss, colic, upset stomach, nausea and vomiting, and muscle cramps.
- * Higher levels can cause muscle and joint pains, weakness, and fatigue.
- * *Lead* exposure increases the risk of high blood pressure.
- * High or repeated exposure may damage the nerves causing weakness, "pins and needles," and poor coordination in the arms and legs.
- * **Tetraethyl Lead** may cause kidney and brain damage and damage to blood cells causing anemia.
- * Repeated exposure causes *Lead* to accumulate in the body. It can take years for the body to get rid of excess *Lead*.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, the following is recommended:

- * Urine test for *Lead* (levels of **0.1 mg per liter** of urine indicates increased exposure. Such levels increase risk from further exposure).

Blood *Lead* tests are usually not accurate with exposure to **Tetraethyl Lead**.

If symptoms develop or overexposure is suspected, the following are recommended:

- * Complete blood count.
- * Kidney function tests.
- * Exam of the nervous system.
- * EEG.

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under OSHA 1910.1020.

Mixed Exposures

- * Body exposure to *Lead* from hobbies using *Lead* solder or pigments, target practice, and drinking moonshine made in *Leaded* containers will increase *Lead* levels.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following controls are recommended:

- * Where possible, automatically pump liquid **Tetraethyl Lead** from drums or other storage containers to process containers.

- * Before entering a confined space where **Tetraethyl Lead** may be present, check to make sure that an explosive concentration does not exist.
- * Work surfaces should be cleaned thoroughly on a routine basis.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

- * Workers whose clothing has been contaminated by **Tetraethyl Lead** should change into clean clothing promptly.
- * Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Tetraethyl Lead**.
- * Eye wash fountains should be provided in the immediate work area for emergency use.
- * If there is the possibility of skin exposure, emergency shower facilities should be provided.
- * On skin contact with **Tetraethyl Lead**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Tetraethyl Lead**, whether or not known skin contact has occurred.
- * Do not eat, smoke, or drink where **Tetraethyl Lead** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

OSHA 1910.132 requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

- * Avoid skin contact with **Tetraethyl Lead**. Wear protective gloves and clothing. Safety equipment suppliers/manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
- * All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.
- * Do not wear rubber gloves.

Eye Protection

- * Wear indirect-vent, impact and splash resistant goggles when working with liquids.
- * Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- * Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing and medical exams, as described in OSHA 1910.134.

- * Where the potential exists for exposure over **0.075 mg/m³**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
- * Exposure to **40 mg/m³** (as *Lead*) is immediately dangerous to life and health. If the possibility of exposure above **40 mg/m³** (as *Lead*) exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode.

HANDLING AND STORAGE

- * Prior to working with **Tetraethyl Lead** you should be trained on its proper handling and storage.
- * **Tetraethyl Lead** is not compatible with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); POTASSIUM PERMANGANATE; SULFURYL CHLORIDE; and METALS.
- * Store in tightly closed containers in a cool, well-ventilated area away from HEAT, RUST, SUN, PLASTICS and RUBBER.
- * Sources of ignition, such as smoking and open flames, are prohibited where **Tetraethyl Lead** is used, handled, or stored in a manner that could create a potential fire or explosion hazard.
- * Use only non-sparking tools and equipment, especially when opening and closing containers of **Tetraethyl Lead**.
- * Wherever **Tetraethyl Lead** is used, handled, manufactured, or stored, use explosion-proof electrical equipment and fittings.

QUESTIONS AND ANSWERS

- Q: If I have acute health effects, will I later get chronic health effects?
- A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

- Q: Can I get long-term effects without ever having short-term effects?
- A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.
- Q: What are my chances of getting sick when I have been exposed to chemicals?
- A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.
- Q: When are higher exposures more likely?
- A: Conditions which increase risk of exposure include physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).
- Q: Is the risk of getting sick higher for workers than for community residents?
- A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.
- Q: Don't all chemicals cause cancer?
- A: No. Most chemicals tested by scientists are not cancer-causing.
- Q: Should I be concerned if a chemical causes cancer in animals?
- A: Yes. Most scientists agree that a chemical that causes cancer in animals should be treated as a suspected human carcinogen unless proven otherwise.
- Q: But don't they test animals using much higher levels of a chemical than people usually are exposed to?
- A: Yes. That's so effects can be seen more clearly using fewer animals. But high doses alone don't cause cancer unless it's a cancer agent. In fact, a chemical that causes cancer in animals at high doses could cause cancer in humans exposed to low doses.
- Q: Can men as well as women be affected by chemicals that cause reproductive system damage?
- A: Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.
- Q: Who is at the greatest risk from reproductive hazards?
- A: Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.

- Q: Should I be concerned if a chemical is a teratogen in animals?
- A: Yes. Although some chemicals may affect humans differently than they affect animals, damage to animals suggests that similar damage can occur in humans.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: <http://www.state.nj.us/health/eoh/odisweb/>

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

HHAG is the Human Health Assessment Group of the federal EPA.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m³ means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NCI is the National Cancer Institute, a federal agency that determines the cancer-causing potential of chemicals.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	-	2
REACTIVITY	-	3
COMBUSTIBLE AND REACTIVE POISONOUS GASES ARE PRODUCED IN FIRE CONTAINERS MAY EXPLODE IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

- * **Tetraethyl Lead** is a COMBUSTIBLE LIQUID.
- * Use dry chemical, CO₂, or foam extinguishers as water may not be effective in fighting fires.
- * POISONOUS GASES ARE PRODUCED IN FIRE, including *Lead* fumes.
- * CONTAINERS MAY EXPLODE IN FIRE.
- * Use water spray to keep fire-exposed containers cool.
- * Vapors may travel to a source of ignition and flash back.
- * If employees are expected to fight fires, they must be trained and equipped as stated in OSHA 1910.156.

SPILLS AND EMERGENCIES

If **Tetraethyl Lead** is spilled or leaked, take the following steps:

- * Evacuate persons not wearing protective equipment from area of spill or leak until clean-up is complete.
- * Remove all ignition sources.
- * Absorb liquids in vermiculite, dry sand, earth, or a similar material and deposit in sealed containers.
- * Ventilate and wash area after clean-up is complete.
- * Keep **Tetraethyl Lead** out of a confined space, such as a sewer, because of the possibility of an explosion, unless the sewer is designed to prevent the build-up of explosive concentrations.
- * It may be necessary to contain and dispose of **Tetraethyl Lead** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
- * If employees are required to clean-up spills, they must be properly trained and equipped. OSHA 1910.120(q) may be applicable.

HANDLING AND STORAGE (See page 3)

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact

- * Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids. Seek medical attention immediately.

Skin Contact

- * Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing

- * Remove the person from exposure.
- * Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- * Transfer promptly to a medical facility.

PHYSICAL DATA

Vapor Pressure: 0.2 mm Hg at 68°F (20°C)

Flash Point: 200°F (93°C)

Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

Chemical Name:

Plumbane, Tetraethyl-

Other Names:

Tetraethylplumbane; TEL

Not intended to be copied and sold for commercial purposes.

NEW JERSEY DEPARTMENT OF HEALTH AND
SENIOR SERVICES

Right to Know Program

PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202